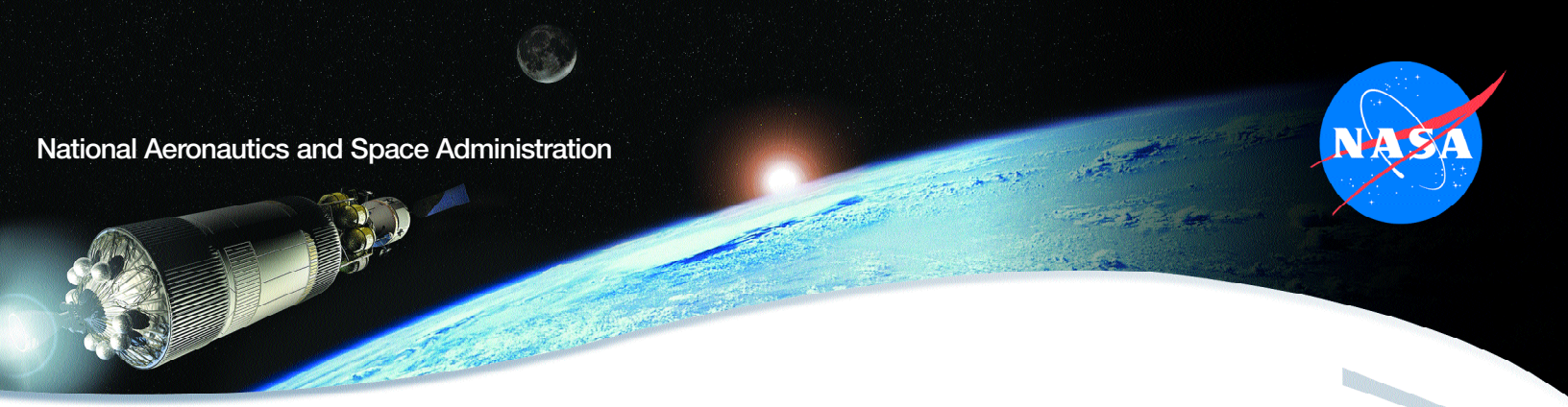


MoPED
Measuring Electrostatic Charge

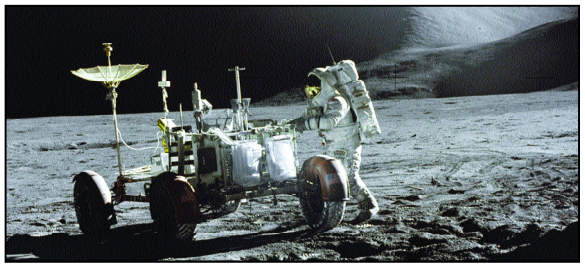
About the Technology

The Moon Portable Electrostatic Detector (MoPED) is a stand-alone, miniaturized electrometer that detects surface charging on spacesuits and equipment. No larger than a pencil, MoPED gives astronauts real-time readings of their static charge as well as those of the equipment they are handling. This way, astronauts can dissipate their charge before handling equipment and potentially creating a discharge hazard that could injure them and their equipment.

Significance of the Technology

The Moon is highly electrostatic. On the day-side of the Moon, the Sun's ultraviolet radiation kicks electrons out of the upper layers of the lunar regolith, giving the surface a net positive charge. On the dark side, the weak solar-wind plasma currents charge the surface strongly negatively. Where the two sides meet at the terminator – the moving line between lunar day and night – the currents that allow an object to dissipate its collected charge decrease.

The Shackleton Crater, the proposed site for a lunar base, is aligned with the terminator. For their safety, therefore, roving astronauts must measure their electrostatic charge and dissipate it when levels become too high. The key is developing a non-intrusive, easy-to-use instrument, like MoPED, to measure this charge build-up and making the tool standard equipment for lunar sorties.



Benefits of the Technology: At-A-Glance

- Offers a convenient and easy-to-read method for measuring electrostatic charging.
- Easily attaches to spacesuits or can be placed near objects that need measurements.
- Runs on batteries, making it highly portable.

Technology Origins

MoPED is based on an electrometer that the inventors created for their "dust devil" research in the Arizona and California deserts a few years ago. The pair is now using R&D funding to adapt the instrument for lunar applications.

Looking Ahead

MoPED's developers will spend the next year miniaturizing their design, conducting trade studies on digital versus analog approaches, and determining whether they can use hybrid-circuit applications.

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